

BASIC MESIC FOREST (COASTAL PLAIN SUBTYPE)

Concept: Basic Mesic Forests are forests of moist but not wet sites, with indicators of unusually high pH or base-rich soils. They are characterized by vegetation dominated or codominated by *Fagus grandifolia*, usually along with *Liriodendron tulipifera*, and *Quercus alba*. The Coastal Plain Subtype is a community of bluffs or other fire-sheltered sites with Coastal Plain soils, generally containing characteristic Coastal Plain species as well as often having species more typical of inland areas.

Distinguishing Features: Basic Mesic Forests are distinguished from Mesic Mixed Hardwood Forests by higher species richness and by the presence of multiple species that in the Piedmont and Coastal Plain are indicators of higher pH soils (e.g., *Actaea racemosa*, *Adiantum pedatum*, *Sanguinaria canadensis*, *Carpinus caroliniana*, *Fraxinus americana*, *Ulmus rubra*, *Asimina triloba*, *Lindera benzoin*, and *Aesculus pavia*). Additional species are more widespread but tend to be more abundant in Basic Mesic Forest, such as *Ostrya virginiana* and *Acer floridanum*. A Basic Mesic Forest should have several members of this suite present in the site and have them dispersed through the community. Because many of the indicator species are herbs, it can be difficult to distinguish Basic Mesic Forests in the winter. In addition, because many of them are present at low density, few may appear in plot data.

The Coastal Plain Subtype is distinguished from the Piedmont Subtype by occurring on Coastal Plain sediments and by floristic differences. Substrates may be rich alluvium on well-drained terrace slopes, soils influenced by limestone, or sandy soils with abundant shells. The interpretation of floristic differences is complex because these communities often harbor disjunct populations of plant species typical of the Piedmont. Plants frequently present in the Coastal Plain Subtype, including *Quercus shumardii*, *Quercus michauxii*, *Stewartia malacodendron*, and *Chasmanthium sessiliflorum* along with the species listed above, are scarce or lacking in the Piedmont Subtype and distinguish the Coastal Plain Subtype of Mesic Mixed Hardwood Forest. Plants found in the Piedmont Subtype but scarcely or never in the Coastal Plain Subtype include *Hybanthus concolor*, *Iris cristata*, *Hydrangea arborescens*, *Actaea pachypoda*, *Dicentra cucullaria*, *Collinsonia canadensis*, *Cardamine concatenata*, *Viburnum rafinesquianum*, *Staphylea trifolia*, *Dirca palustris*, *Quercus muhlenbergii*, and *Carya carolinae-septentrionalis*, among others.

Basic Mesic Forests may share some species with Brownwater Levee Forest, but lack characteristic alluvial species such as *Platanus occidentalis*, *Acer negundo*, and generally *Celtis laevigata*.

Coastal Plain Marl Outcrop communities may be embedded in Basic Mesic Forest. They are distinguished by substantial cover of limestone (“marl”), with most vascular plants limited to rooting in crevices and soil pockets. Coastal Plain Marl Outcrops tend to be small and often are shaded by trees of the adjacent Basic Mesic Forest.

Synonyms: *Fagus grandifolia* - *Quercus alba* - (*Acer barbatum*) / Mixed Herbs Forest (CEGL007206).

Ecological Systems: Southern Atlantic Coastal Plain Mesic Hardwood Forest (CES203.242).

Sites: Basic Mesic Forests occur on upland areas protected from fire. The Coastal Plain Subtype is primarily on north-facing river bluffs and ravine slopes with limestone close to the surface, occasionally on slopes of alluvial terraces that are now above flood levels.

Soils: As in the Piedmont Subtype, soils are higher in pH, base saturation, and content of calcium and other nutritive cations, but they do not generally exceed neutral pH. Soil series mapped are quite variable. Recorded occurrences for which soils were noted included 11 series, of which none were in more than two sites. Most are Hapludults or Paleudults, a few are Endoaquults, and some are simply mapped as Dystrochrepts. Many of these examples may actually be on inclusions in the soil map unit.

Hydrology: Moisture levels are mesic overall, though local small areas with seepage are common in the Coastal Plain Subtype.

Vegetation: Forests are dominated by combinations of species that usually include *Fagus grandifolia* and often include *Quercus alba*, *Liriodendron tulipifera*, and *Carya tomentosa*, and sometimes include *Quercus shumardii*, *Quercus michauxii*, *Quercus nigra*, *Pinus taeda*, *Fraxinus americana*, *Acer floridanum*, and *Ulmus rubra*. Understory species typically frequent and abundant in CVS data are *Carpinus caroliniana*, *Acer floridanum*, *Cornus florida*, *Acer rubrum*, and *Ilex opaca*, less frequently *Asimina triloba*, *Stewartia malacodendron*, *Magnolia tripetala*, and *Oxydendrum arboreum*. Shrubs tend to be few but may include *Hamamelis virginiana*, *Lindera benzoin*, *Symplocos tinctoria*, *Euonymus americana*, *Styrax grandifolia*, *Callicarpa americana*, and *Persea palustris*. Widespread vines of the Coastal Plain are frequent, including *Parthenocissus quinquefolia*, *Smilax rotundifolia*, *Muscadinia rotundifolia*, *Smilax glauca*, and *Toxicodendron radicans*. The herb layer is dense to moderate. *Polystichum acrostichoides* or *Mitchella repens* may form large patches. Other species that sometimes are abundant in plots include *Podophyllum peltatum*, *Adiantum pedatum*, *Amphicarpaea bracteata*, *Parthelypteris noveboracensis*, *Geranium maculatum*, and *Brachyelytrum erectum*. Other species are less frequent but are indicative of basic conditions, including *Sanguinaria canadensis*, *Solidago caesia*, *Endodeca serpentaria*, *Phryma leptostachya*, *Dichanthelium boscii*, *Actaea racemosa*, *Melica mutica*, and *Aquilegia canadensis*.

Range and Abundance: The equivalent association is ranked G4, but should perhaps be G3. This community is rare in North Carolina, and almost all examples are small. The equivalent association ranges through South Carolina and possibly into Georgia.

Associations and Patterns: This subtype occurs as small patches, associated with rare specialized site conditions. It may grade or abruptly transition to Mesic Mixed Hardwood Forest at the edge of the calcareous substrate. It may grade to Dry-Mesic Basic Oak–Hickory Forest on drier sites, and usually is bordered by a floodplain community below. Coastal Plain Marl Outcrop communities are embedded in a few examples.

Variation: There are two distinct variants of this subtype. These may warrant separate associations, but the floristic differences have not been adequately clarified.

1. Marl Outcrop Variant occurs on soils derived from or influenced by limestone.
2. Terrace Slope Variant occurs on slopes mantled with rich alluvial material on the edges of floodplain terraces.

Dynamics: Dynamics are generally similar to other Piedmont and Coastal Plain Mesic Forests. Some examples are more subject to fire than the Piedmont Subtype, because they are associated with flammable upland vegetation. This subtype is more subject to disturbance by hurricanes than in the Piedmont Subtype, because they are closer to the coast and because soils are less dense.

Comments: Few studies have been published that include the Coastal Plain Subtype. Sears (1966) addressed those along Island Creek.

Rare species: Vascular plants – *Camassia scilloides*, *Carex basiantha*, *Carex emmonsii*, *Carex jamesii*, *Enemion biterntum*, *Hackelia virginiana*, *Malaxis spicata*, *Ponthieva racemosa*, *Quercus austrina*, *Schisandra glabra*, *Scutellaria nervosa*, *Trillium sessile*, *Urtica chamaedryoides*, likely others.

References:

Sears, M.N. 1966. A floristic study of the limestone along Island Creek in Jones County, North Carolina. M.S. Thesis, University of North Carolina, Chapel Hill.